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INFLUENCE OF POLARIZATION OF THE WALNUT PLYWOOD IN THE PROCESS OF PREPARATION ON ITS WATER AND MOISTURE ABSORPTION

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Today products from solid laminated wood occupy the significant proportion of the finished product of wood processing companies [1-2].

Ways of increase the adhesion bond strength known today are practically exhausted. Therefore, the methods of increase of the adhesive strength of the laminated wood using intensive technologies (for example, by influence of the electric and magnetic fields, ultrasound, etc.) represent particular scientific and practical interest [3-4].

Influence of the nature polymeric matrix and the ply on the chargeability of plywood on their basis was found out at the first stage of work (Table 1). It became clear that samples are polarized in the constant electric field, values of the surface potential, the effective surface charge density and the electric field intensity in an hour after production are possible to estimate (Table 1).

Table 1

Polarizing characteristics of plywood materials

ply + glue	**Start values**		**Values after 30 days**	
	***E*, V/m**	**σ , μC/m^2**	**E, V/m**	**σ , μC/m^2**
walnut ply +UFR	3008	0,014	0	0
walnut ply + PVAC	1520	0,009	0,11	0,001
walnut ply + epoxy resin	6548	0,041	0,2	0,009

The swelling process on the first days of storage of plywood in water showed that the weight of samples was stabilized to a certain constant value [5]. The difference in the size of swelling of the polarized and control samples was insignificant; however,

it was shown that the polarized samples absorb less moisture than the control by 10 % (gain of mass was 30 % and 40 % respectively). This is conditioned by a fast relaxation process of the polarized state, especially under the conditions of a full immersion in water.

The polarization of the plywood by means of the constant electric field is able to slightly reduce the value of water absorption and moisture absorption by plywood material.

The swelling of plywood samples at effect of moisture at full or partial immersion depends by nature the ply and glue. Samples on the basis of the walnut ply and UFR had the greatest swelling capacity. The polarization of plywood allows keeping the integrity of samples (the appearance) under the conditions of a high humidity.

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ТЕРМОДИНАМИЧЕСКИЕ СВОЙСТВА ГАДОЛИНИЯ В СПЛАВАХ Ga–Sn, Ga–Zn ЭВТЕКТИЧЕСКОГО СОСТАВА

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TERMODYNAMIC PROPERTIES OF GADOLINIUM IN GA–SN, GA–ZN EUTECTIC ALLOYS

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Thermodynamic properties of gadolinium in Ga–Sn and Ga–Zn eutectic based alloys were studied. Temperature dependences of gadolinium activity in the studied alloys were determined at 300–800 ^{o}C employing the EMF method. Solubility of gadolinium in the Ga–Sn and Ga–Zn alloys was measured at 189–800 ^{o}C using method of IMCs sedimentation. Activity coefficients as well as partial and excess thermodynamic functions of gadolinium were calculated in the studied alloys on the basis of the obtained experimental data.